

**WHAT IS CLAIMED IS:**

1. A system for controlling a hydraulic pressure of an automatic transmission, comprising:
  - a torque converter comprising a lockup clutch, the lockup clutch carrying out
  - 5 direct coupling between an engine and the transmission;
  - a lockup solenoid valve which provides a signal pressure for controlling engagement of the lockup clutch;
  - a lockup control valve which provides an engagement pressure to the lockup clutch in accordance with the signal pressure; and
  - 10 a control unit which controls the lockup solenoid valve, the control unit being programmed to:
    - determine a torque provided to the torque converter; and
    - control the signal pressure in accordance with the torque.
- 15 2. The system as claimed in claim 1, wherein the control unit is further programmed to set the signal pressure at a maximum value when the torque has a maximum value.
3. A lockup control valve, the lockup control valve being controlled by a signal
- 20 pressure of a lockup solenoid to provide an engagement pressure to a lockup clutch for direct coupling between an engine and an automatic transmission, the lockup control valve comprising:
  - a spool, the spool being put in a fully biased position by a force greater than a maximum value of the signal pressure.
- 25 4. A system for controlling a hydraulic pressure of an automatic transmission, comprising:
  - a torque converter comprising a lockup clutch, the lockup clutch carrying out direct coupling between an engine and the transmission;

a lockup solenoid valve which provides a signal pressure for controlling engagement of the lockup clutch;

a lockup control valve which provides an engagement pressure to the lockup clutch in accordance with the signal pressure, the lockup control valve comprising a  
5 spool; and

a control unit which controls the lockup solenoid valve, the control unit being programmed to control the signal pressure to hold the engagement of the lockup clutch with the spool of the lockup control valve being in an axially movable position before the fully biased position.

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5. An automatic transmission, comprising:

a torque converter comprising a lockup clutch, the lockup clutch carrying out direct coupling between an engine and the transmission;

a lockup solenoid valve which provides a signal pressure for controlling  
15 engagement of the lockup clutch;

a lockup control valve which provides an engagement pressure to the lockup clutch in accordance with the signal pressure; and

a control unit which controls the lockup solenoid valve, the control unit being programmed to:

20 determine a torque provided to the torque converter; and  
control the signal pressure in accordance with the torque.

6. The automatic transmission as claimed in claim 5, wherein the control unit is further programmed to set the signal pressure at a maximum value when the torque has  
25 a maximum value.

7. An automatic transmission, comprising:

a torque converter comprising a lockup clutch, the lockup clutch carrying out direct coupling between an engine and the transmission;

a lockup solenoid valve which provides a signal pressure for controlling engagement of the lockup clutch;

a lockup control valve which provides an engagement pressure to the lockup clutch in accordance with the signal pressure and comprises a spool; and

- 5           a control unit which controls the lockup solenoid valve, the control unit being programmed to control the signal pressure to hold the engagement of the lockup clutch with the spool of the lockup control valve being in an axially movable position before the fully biased position.

- 10   8.       A method of controlling a hydraulic pressure of an automatic transmission, the transmission comprising:

a torque converter comprising a lockup clutch, the lockup clutch carrying out direct coupling between an engine and the transmission;

- 15           a lockup solenoid valve which provides a signal pressure for controlling engagement of the lockup clutch; and

a lockup control valve which provides an engagement pressure to the lockup clutch in accordance with the signal pressure,

the method comprising:

determining a torque provided to the torque converter; and

- 20           controlling the signal pressure in accordance with the torque.

9.       The method as claimed in claim 8, further comprising setting the signal pressure at a maximum value when the torque has a maximum value.

- 25   10.       A method of controlling a hydraulic pressure of an automatic transmission, the transmission comprising:

a torque converter comprising a lockup clutch, the lockup clutch carrying out direct coupling between an engine and the transmission;

a lockup solenoid valve which provides a signal pressure for controlling

engagement of the lockup clutch; and

a lockup control valve which provides an engagement pressure to the lockup clutch in accordance with the signal pressure, the lockup control valve comprising a spool,

5 the method comprising:

controlling the signal pressure to hold the engagement of the lockup clutch with the spool of the lockup control valve being in an axially movable position before the fully biased position.